Docket 99-168

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

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Federal Communications Commission
Office of Secretary

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Mr. Dale Hatfield
Chief, Office of Engineering and Technology
Federal Communications Commission
Washington, D.C. 20554

Dear Mr. Hatfield:

The Federal Communications Commission's Notice of Proposed Rulemaking (NPRM) in the matter of service rules for the 746-764 and 776-794 MHz bands, and revisions to Part 27 of the Commission's rules (IRAC Document 31070/1) was discussed at the IRAC meeting on April 27, 1999. As agreed upon, I am forwarding you NTIA's comments to the NPRM. If you have any questions do not hesitate to contact me at (202) 482-1850.

Sincerely,

William T. Hatch
Acting Associate Administrator
Office of Spectrum Management

Enclosure

ENCLOSURE

The following paragraphs provide proposed modifications to the draft Notice of Proposed Rulemaking for Service Rules for the 746-764 and 776-794 MHz bands and Revisions to Part 27 of the Commission's Rules.

I. Out-of-Band and Spurious Emission Limits

In paragraph 67 proposed emission limits are given for the fixed and mobile systems operating in the 746-764 MHz and 776-794 MHz bands. The band 1559-1610 MHz has been identified by the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) as the sole band available to satisfy the spectrum requirements of the Global Navigation Satellite System (GNSS).[1] The U.S. Global Positioning System (GPS) operating in the 1563.42-1587.42 MHz and the Russian Federation Global Navigation Satellite System (GLONASS) operating in the 1598.0625-1605.375 MHz band and their associated augmentation systems are constituent elements of the GNSS.[2] The protection of spectrum used to support the GNSS is consistent with the U.S. commitment to the "continuous availability of GPS" announced in the Presidential Decision Directive of March 29, 1996. Congress endorsed this commitment in statute with the Defense Authorization Act of 1998 (PL 105-85) signed into law by the President. Congress further directed the Administration to "protect the integrity of the Global Positioning System frequency spectrum against interference and disruption" in the Defense FY99 Appropriations Conference Report and in the Commercial Space Act of 1998.[3]

In order to ensure that fixed and mobile equipment will not cause radio frequency interference to GNSS when used for precision approach and landing, NTIA recommends that the following emission limits should be applied to all spurious emissions, including second harmonics in the 1559-1610 MHz frequency range: 1) a wide band limit of -70 dBW/MHz on the equivalent isotropically radiated power (EIRP) density and 2) a narrowband limit of -80 dBW.[4]

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[1] The GNSS is a satellite system which provides worldwide position determination, time and velocity capabilities for multi-modal use. As currently envisioned, the GNSS will encompass aviation, maritime, and terrestrial navigation.

[2] In the U.S. these augmentation systems include: the Local Area Augmentation System (LAAS), the Wide Area Augmentation System (WAAS), and pseudo-satellites (pseudolites).

[3] H.R., 105-746, Defense FY99 Appropriations Conference Report; H.R. 1702 Commercial Space Act of 1998.

[4] Wideband interference has a bandwidth in the range of 100 kHz to 1 MHz; narrowband interference has a bandwidth less than or equal to 700 Hz.

II Special Considerations for Use of Channels 66 and 67

In paragraph 71 the GPS signal bandwidth is given as 1570-1580 MHz. In the third edition of the GPS Standard Positioning Service (SPS) Signal Specification the bandwidth is defined for the GPS Coarse/Acquisition code signal at 1575.42 MHz (L1) has been amended as follows:

> *"The L-band SPS ranging signal is a 2.046 MHz null-to-null bandwidth signal centered on L1. The transmitted ranging signal that comprises the GPS-SPS is not limited to the null-to-null signal and extends through the band 1563.42 to 1587.42 MHz."*

The SPS Signal Specification was amended in recognition that civil GPS receivers, including those used for safety-of-life applications, will use the entire transmitted bandwidth of the C/A code signal to minimize tracking errors due to noise, interference, and multipath.

In order to reflect the amended SPS Signal Specification NTIA recommends that the frequency range of 1570-1580 MHz be replaced with 1563.42-1587.42 MHz.

In paragraph 71 it is stated there is no credible evidence that existing broadcast use of channels 66 and 67 has ever caused interference to operational GPS applications. The Department of Transportation and NTIA conducted field monitoring testing at numerous television stations throughout the United States. It was found that in all cases radiated harmonic levels were below -100 dBc, which is 40 dB below the FCC specification. It is believed that the television stations are motivated to keep harmonic content low because this substantially improves the quality of the received television picture.

The current DTV mask requires that emissions including harmonics that are more than 6 MHZ from the channel edge, must be attenuated no less than 110 dB below the average transmitter power.[5] This value is consistent with the current harmonic suppression levels that can be achieved by television transmitters and will protect GNSS precision approach landing operations. NTIA recommends that the emission limit of -110 dB should be included as the proposed unwanted emission limit, including harmonics, for DTV transmitters operating in the 746-764 MHz and 776-794 MHz bands.

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[5] *Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order In the Matter of Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service*, MM Docket No. 87-268, FCC 98-24, adopted February 17, 1998, released February 23, 1998.